

Budapest. Observatoire sismique.

Rapport annuel sur les observatoires sismiques des pays de la Sainte Couronne de Hongrie. Budapest. 1907. 11 p. 8°.

Dellenbaugh, Frederick S.

The romance of the Colorado river. xxxv, 399 p. 8°.

Great Britain. Meteorological office.

Hourly readings obtained from the self-recording instruments at four observatories in connection with the Meteorological office, 1906. London. xiii, 197 p. 8°.

Hérault. Commission météorologique.

Bulletin météorologique. Année 1906. Montpellier 1907. 128 p. 4°.

Hesse. Grossherzogliche hydrographische Bureau.

Deutsches meteorologisches Jahrbuch... 1906. Darmstadt. 1907.

[13], 59 p. 8°.

Hoyt, John Clayton and Grover, Nathan Clifford.

River discharge. New York. 1907. vii, 137 p. 8°.

Milham, Willis I.

Cloud classification. 9 p. 8°. Williamstown. 1907.

Riefler, S.

Die Uhrenanlage der Hauptstation für Erdbebenforschung am physikalischen Staatslaboratorium zu Hamburg. Laibach. 1907. 12 p. 8°.

RECENT PAPERS BEARING ON METEOROLOGY.

H. H. KIMBALL, Librarian.

The subjoined titles have been selected from the contents of the periodicals and serials recently received in the Library of the Weather Bureau. The titles selected are of papers or other communications bearing on meteorology or cognate branches of science. This is not a complete index of the meteorological contents of all the journals from which it has been compiled; it shows only the articles that appear to the compiler likely to be of particular interest in connection with the work of the Weather Bureau. Unsigned articles are indicated by a —

American society of civil engineers. Proceedings. New York. v. 31. Dec., 1907.

Bruyn-Kops, J. de. Notes on rainfall at Savannah, Ga. p. 1101-1110. [Includes tabulation of all cases of excessive rainfall at Savannah, Ga., 1889-1906, inclusive.]

Electrical world. New York. v. 50. Dec. 7, 1907.

— Lightning protection. p. 1083-1084. [Describes recent forms of lightning arrestors.]

Geographical journal. London. v. 30. Dec., 1907.

Woosnam, R. B. Ruwenzori and its life zones. p. 616-629. [Includes notes on the climate.]

Nature. London. v. 77. Dec. 12, 1907.

— Experiments on wind pressure. p. 139-140. [Abstract of paper by T. E. Stanton.]

Royal society. Proceedings. London. Series A. v. 80. No. A 535.

Schuster, Arthur. The diurnal variation of terrestrial magnetism. p. 80-82.

Science abstracts. London. v. 10. Nov., 1907.

Wilkinson, A. Air resistance. [Abstract of article by Joubet.] p. 567.

Borons, H. Indian Ocean meteorology and the southwest monsoon. [Abstract of article by C. W. Brebner.] p. 590.

Scientific American supplement. New York. v. 64. Dec. 14, 1907.

— Preventing frost on show windows. Cold-weather advice. p. 375.

— Electric waves in the service of meteorology. [Abstract of paper by Guillén-García describes the use of thunderstorm recorders in forecasting.] p. 382-383.

Stenzel, Arthur. The climate of Mars. Its effect on the habitability of the planet. p. 383.

Aérophile. Paris. 15 année. Nov., 1907.

Tatin, Victor. Les oiseaux, les aéroplanes et le coefficient de la résistance de l'air. p. 309-312.

Soubies, Jacques. Physiologie de l'aéronaute. p. 316-317. [Abstract.]

Nature. Paris. 36 année. 14 déc. 1907. Supplément.

— L'argon de l'air atmosphérique. p. 9. [Note on new method of extracting argon and the other rare gases of the atmosphere.]

Journal de physique. Paris. 4 série. Tome 6. Nov., 1907.

Trovato-Castorina, G. Sur la direction des décharges électriques atmosphériques dans les coups de foudre. p. 928. [Abstract.]

Meteorologische Zeitschrift. Braunschweig. Bd. 24. Nov. 1907.

Jaerisch, Paul. Zur Theorie der Luftdruckschwankungen auf Grund der hydrodynamischen Gleichungen in sphärischen Koordinaten. p. 481-498.

Tisserenc de Bort, Léon. Ueber die Verteilung der Temperatur in der Atmosphäre am nördlichen Polarkreis und in Trappes. p. 498-499.

Hann, J. M. E. Stephan über Temperatur, Regen und Winde von Marseille. p. 500-501.

Hann, J. Die äquivalente Temperatur als klimatischer Faktor. p. 501-504.

Trabert, Wilhelm. Eine mögliche Ursache der geringen Temperaturabnahme in grossen Höhen. p. 504-506.

Nippoldt, A. Vorläufige Ergebnisse der magnetischen Landesaufnahme von Baden, Hessen und Elsass-Lothringen. p. 506-508.

Hann, J. Osc. V. Johansson: Ueber die anemometrischen Windstärkemessungen in Finnland. p. 508-509.

Hann, J. R. Strachan über die Temperatur um die britischen Inseln in Beziehung zum Golfstrom. p. 509-511.

Hann, J. A. Defant über den Talwind des Unterinntales. p. 511.

Schmidt, Wilhelm. Ueber Messungen der terrestrischen Refraktion auf dem hohen Sonnbllick. p. 512-514.

Macdonall, Alex. B. Sonnenflecken und Regenfall zu Rothesay (Schottland) 1804 bis 1904. p. 514.

Hann, J. Der tägliche Gang der Temperatur in den Vereinigten Staaten. p. 514-515.

Hann, J. Zum Klima von Porto Rico. p. 515-516.

— Dr. L. Grossman über die Veränderlichkeit der Temperatur von Tag zu Tag an der deutschen Küste 1890-1899. p. 516-518.

Exner, F. M. W. N. Shaws Untersuchungen über die Lebensgeschichte von Luftströmungen an der Erdoberfläche. p. 520-523.

Hann, J. Zum Klima von Finnland. p. 523.

Naturwissenschaftliche Rundschau. Berlin. 22 Jahrgang. 5 Dez., 1907.

Messerschmitt, J. B. Die erste Generalversammlung der internationalen seismologischen Assoziation im Haag vom 21. bis 25. September 1907. p. 626-628.

Petermanns Mitteilungen. Gotha. 53. Band, 1907.

Halbfass, —. Apparat von Schnitzlein zur selbsttätigen Aufzeichnung von Wasserständen. p. 241-242.

Physikalische Zeitschrift. Leipzig. 8 Jahrgang. 15 Nov. 1907.

Linke, F. Ueber die Arbeiten des Samoa-Observatoriums. p. 871.

Börnstein, R. Zur Geschichte der hundertteiligen Thermometer-skala. p. 871-874. [Inversion of the Celsius scale attributed to Linné.]

Herrmann, E. Ueber tatsächliche viertägige Perioden des Luftdruckes. p. 874-879.

Zeitschrift für Instrumentenkunde. Berlin. 27 Jahrgang. Nov., 1907.

Sprung, A. Eine Vereinfachung des Gallenkampschen Regen-Auffangapparates. p. 340-343.

Netherlands. Koninklijk Nederlandsch meteorologisch Instituut. Mededelingen en verhandelingen. No. 102.

Gallé, P. H. Cyclone in the Arabian Sea. October 18-November 4, 1906. 8 p.

Società degli spettroscopisti italiani. Memorie. Catania. v. 36. 1907.

Lo Surdo, Antonino. Il nuovo metodo di Knut Angström per lo studio della radiazione solare. p. 192-197. [Abstract.]

STUDIES OF FROST AND ICE CRYSTALS.

BY WILSON A. BENTLEY. Dated Jericho, Vt., May 28, 1906. Revised July, 1907.

(Continued from October Review.)

VIII.—CLASSIFICATION OF ICE CRYSTALS.**(67) List of types.**

There are at least five different and characteristic types among the nuclear or germ ice crystals, and two or three additional post-nuclear types. In general, if growth is allowed to proceed for a sufficient length of time, each of these various germ types passes thru certain typical and characteristic growth phases peculiar to it. All, or nearly all, when first organized, possess smooth edges and contours, but they subsequently pass thru the scalloped, the ray, and the branch-like stages of growth before completion. These various types, because of peculiarities of form and resemblance to the objects after which they are named, may be grouped and named as follows:

1. Lanceolate Lance-like, MLA.
2. Discoidal Disc-like, MDE.
3. Solid hexagonal Solid hexagonal plate-like, MHC.
4. Flower-like Ice flower-form, MFD.
5. Spandrelliform Resembling a spandrel, MSE.
6. Coralline Resembling coral, MCF.

Each of these respective types requires and will receive especial mention by itself in the text, in the order of relative frequency of occurrence of each in nature, so far as I have observed them at Jericho, Vt.

(68) Type MLA. Lanceolate ice crystals.

These lance-like or needle-like crystals are illustrated in